Proposal for Improving Hazardous Waste Regulation at Colleges and Universities

Comments Submitted by:

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Docket ID No. RCRA-2003-0012

July 11, 2003

Introduction

These comments are submitted to the U.S. Environmental Protection Agency (EPA) by CSHEMA, APPA, C2E2, NACUBO and ACE, which represent a majority of the over 3,900 colleges and universities across the nation. We request that these comments be included in Docket ID No. RCRA-2003-0012, and that our proposed regulatory changes be placed on EPA's Semi-Annual Regulatory Agenda.

CSHEMA, APPA, NACUBO and ACE submitted a March 7, 2002 paper to the EPA entitled "Environmental Excellence in Higher Education" (*White Paper)*. This *White Paper* described the two-decade history of problems surrounding application of hazardous waste management regulations developed in the industrial context, to the activities of colleges and universities, and the repeated acknowledgement by Congress and the EPA, that regulatory changes were needed to protect the environment and remove irrational burdens. The *White Paper* has separately been submitted to this docket.

On June 18, 2003, EPA held a Public Stakeholder Meeting on Hazardous Waste Management in Research and Academic Laboratories, soliciting information regarding many of the issues outlined in the *White Paper*. [68 FR 33123 6/3/03]. Many representatives of institutions of higher education participated in that public hearing. EPA requested that additional comments, including answers to a series of specific questions, be submitted to the agency by July 18, 2003.

This submission constitutes the comments of CSHEMA, APPA, C2E2, NACUBO and ACE. These comments follow the *White Paper* referred to above. It also builds upon many of the principles advanced by the Howard Hughes Medical Institute (HHMI) "Consensus Practices in Hazardous Waste" project, and is consistent with the practices incorporated in the New England Universities Laboratories XL Project (Lab-XL). These comments are divided into two parts. Part I contains specific recommended regulatory changes to address the problems inherent in applying RCRA regulatory requirements designed for industry, to the academic setting.

Part II contains answers to the questions posed by EPA in connection with the June 18th Public Hearing. In many respects, these questions are also answered in the context of the requested regulatory changes.

We propose that the current RCRA regulations be amended to give institutions of higher education the option of developing a campus specific, risk based and performance oriented, Academic Chemical Waste Management Plan similar to Spill Prevention Control and Countermeasure ("SPCC") plans that describes how the college or university will manage (identify, collect, label, and store) materials that may enter the hazardous waste stream. This proposal presents six specific recommendations as follows:

1. Authorize the development of a risk based and performance oriented Academic Chemical Waste Management Plan (ACWMP) that allows colleges and universities to create campus specific requirements for the initial management of hazardous waste.
2. Authorize more flexible and tailored waste determination procedures.
3. Authorize synchronizing accumulation times with the academic calendar.
4. Authorize bench top and small- scale treatment to more safely manage hazardous waste and promote waste minimization.
5. Authorize academic institutions to have a single EPA ID number per campus to support centralized waste management.
6. Authorize academic institutions to retain small generator status consistent with their activities.

PART I: Proposed Regulatory Changes

1. Authorize the development of a risk based and performance oriented Academic Chemical Waste Management Plan (ACWMP) that allows colleges and universities to create campus specific requirements for the initial management of hazardous waste.

Issue

As explained in the *White Paper*, it has long been recognized that there are numerous ill fits for academia that inhibit waste minimization, increase disposal costs and increase safety hazards. The most direct way to address this mismatch is to permit institutions of higher education the option of developing a risk based and performance oriented *Academic Chemical Waste Management Plan* which can be tailored to their circumstances but that also provides equivalent protection of the environment and is enforceable. Specifically, we are proposing a plan similar in concept to a Spill Prevention Control and Countermeasures ("SPCC") plan in that it is the institution's obligation to develop an effective plan. The regulatory authorities may enforce it, but pre-approval is not necessary.

The purpose of the ACWMP is to minimize risks and to ensure effective use of resources by allowing institutions of higher education greater flexibility in initially identifying, collecting, labeling and storing materials that may enter the hazardous waste stream. It is this initial on-site

management phase that distinguishes institutions of higher education from industrial operations. Once the substance is in the institution's hazardous waste stream, it would be transported and disposed as provided for in current RCRA regulations. The criteria for the ACWMP will be risk based, goal oriented and descriptive, rather than prescriptive.

Proposed Regulatory Changes

a. Amend Part 260 to recognize Academic Chemical Waste and Academic Chemical Waste Management Plans

40 CFR §260.10 [Definitions]

"*Academic Chemical Waste* is hazardous waste that arises from teaching, research and/or patient care in institutions of higher education (SIC codes 821 and 822)."

"Academic Chemical Waste Management Plan" (ACWMP) is a chemical waste management plan developed by institutions of higher education (SIC Codes 821 and 822) that provides for the management of hazardous waste in lieu of compliance with Parts 262 (except 262 Part K) through 270 of this chapter.

b. Provide an option for academic institutions to develop campus specific plans for the initial identification and handling of academic hazardous waste in lieu of meeting the standard requirements:

40 CFR §261.4(h) [new subsection]:

"Academic chemical waste is not subject to the requirements of parts 262 (except 262 Part K) through 270 of this chapter at institutions of higher education which have an Academic Chemical Waste Management Plan (ACWMP) meeting the requirements of 40 CFR §262 Part K), unless otherwise specifically provided for in 40 CFR §262 Part K, and until the waste is declared to be a hazardous waste under Subpart K.

c. Add a new 40 CFR §262 Part K that contains the requirements of an ACWMP: Subpart K: Academic Chemical Waste Management Plans

§262.200 Purpose, Scope and Application

(a) These regulations authorize institutions of higher education (SIC Codes 821 and 822) to develop an Academic Chemical Waste Management Plan ("ACWMP") in lieu of complying with Parts 262 through 270.

(b) The purpose of the ACWMP is to meet the goals of Part 262 through 270 relating to the initial on-site identification, labeling, storage and handling of substances that might constitute RCRA-regulated wastes in a manner that will be as functionally protective of the environment as are the requirements of Part 262 through 270. To the extent that any requirements of Part 262 through 270 are not addressed in the ACWMP, the requirements of Parts 262 through 270 shall apply. The ACWMP shall be limited to on-site activities.

§262.201 Elements of an ACWMP[1]

(a) An institution is deemed to be in compliance with the requirements of section 262-270 of this chapter if their plan contains all of the following elements:

(1) Program management
  (i) Roles and responsibilities
  (i) Areas covered

(2) Education and awareness
  (i) Technically qualified individuals
  (ii) Waste generators in laboratories and studios

(3) Waste Container Management
  (i) Identification
  (ii) Labeling
  (iii) Accumulation limits (maximum accumulation time of 1 year)

(4) Chemical Waste Procedures
  (i) Waste minimization practices
  (ii) RCRA waste determination responsibilities
  (iii) Treatment options
  (iv) Drain disposal management

(5) Release Prevention and Response
  (i) Container integrity
  (ii) Secondary containment

(6) Quality assurance, including inspections

2. Authorize more flexible and tailored waste determination procedures.

Issue

One of the most important disconnects in the application of current RCRA regulations and the activities at institutions of higher education relates to the initial waste determination procedure. The conclusion of one academic laboratory user deciding that he or she no longer needs a reagent or material should not equate to a hazardous waste determination under RCRA. Academic research laboratories are unique in that there is great potential that a substance may have different uses given the number of students and researchers that might use the laboratory facilities. Our recommendation allows laboratory personnel to determine that material they have is no longer of value *to them*, but leaves it to others ("technically qualified personnel") to make that decision on behalf of the institution or facility. The actual RCRA hazardous waste determination could occur away from the point of generation, if that relocation is both efficient and environmentally protective. This is similar to the process allowed in the "manufacturing process unit exclusion" at 40CFR 261.4 (c).

[1] We propose to work with the EPA to ensure that these criteria are descriptive, rather than prescriptive.

Proposed Regulatory Changes

§262.202 Special Rules Applicable to ACWMPs

(a) For purposes of meeting the goals of §262.11(e) [relating to the hazardous waste determination]

(1) The ACWMP shall designate a technically qualified person who makes determinations according to the institution's ACWMP;

(2) The waste determination may be made in the laboratory or as soon as practicable after the substance has left the academic laboratory and it is determined by the technically qualified person that the substance has no other use on site;

(3) The location where academic chemical waste is subject to a RCRA waste determination shall be specified in the institution's ACWMP. If provided for in the ACWMP, academic chemical waste may be transported to central chemical waste management facility prior to the completion of a waste determination.

3. Authorize synchronizing accumulation times with the academic calendar.

Issue

On many campuses across the country, waste must be removed from accumulation areas within 90 days, regardless of cost (i.e. unless they have TSD facility.) But campus waste generation follows academic calendars, and is not on a 90-day cycle. This disconnect undermines waste minimization opportunities (e.g., solvent distillation) and results in substantially higher disposal costs by not permitting the accumulation of sufficient quantities for cost-effective treatment, waste minimization and shipment. These time limits eliminate economies of scale. In addition, because they cannot afford to ship small amounts of waste frequently, regulations encourage campuses to store waste in active, student-occupied spaces to take advantage of the more generous limits of "satellite accumulation areas". Storage in these active areas has a higher risk for accident or release than secured storage in non-occupied accumulation areas.

Proposed Regulatory Changes

Add a new special rule in 262 Part K (ACWMPs):

§262.202 Special Rules Applicable to ACWMPs:

(b) For purposes of meeting the goals of 40 CFR §262.34 [Accumulation Time], Academic hazardous waste may be stored for a period not to exceed one year from the time that the waste enters the accumulation area, <u>provided that</u>:

(1) The waste is placed:

(i) In containers and the generator complies with the applicable requirements of subparts I, AA, BB, and CC of 40 CFR part 265; and/or

(ii) In tanks and the generator complies with the applicable requirements of subparts J, AA, BB, and CC of 40 CFR Part 265 except Secs. 265.197(c) and 265.200;

(2) The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container;

(3) While being accumulated on-site, each container and tank is labeled or marked clearly with

(i) The contents of the container and the hazards of the contents; or

(ii) The words ``Hazardous Waste''; and

(4) The generator complies with the requirements for owners or operators in Subparts C and D in 40 CFR part 265, with Sec. 265.16, and with 40 CFR 268.7(a)(5).

4. Allow bench top and small-scale treatment to more safely manage hazardous waste and promote waste minimization.

Issue

In limited circumstances, EPA appears to allow treatment by generators without a permit (1984 preamble to SWDA), and current regulations include several very limited treatment allowances (e.g. treatment in containers, CESQG treatment, elementary neutralization, wholly enclosed treatment facilities, wastewater treatment units, treatment to address underlying LDR constituents, silver recovery, etc.). These limitations do not reflect current treatment practices in the academic laboratory setting, which have been demonstrated to be safe and environmentally sound.

Specifically, the container management standards (40 CFR §264.173) and land ban standards (40 CFR §268) effectively prohibit and place unreasonable burdens on treatment protocols. For example, the regulations are not clear regarding how container management standards, which require closed containers, apply to treatment in containers under satellite accumulation area rules. There is an allowance for treatment to reduce underlying hazards under LDR (40 CFR 268), but this requires a Waste Analysis Plan ("WAP"), which is prohibitively complicated for the treatment of one-time research wastes which are so common in higher education.

This confusion leads some colleges and universities without RCRA experts to prohibit treatments even though treatment may be technically possible, environmentally preferable, responsible, and safe. This increases risk and cost of chemical waste management. Conversely, other institutions often would like to include treatment as part of the academic and/or research process. This practice would promote environmental awareness and concern among students and researchers.

Addressing this issue in the regulations (providing for the ACWMP) should include making it clear that certain container management standards and certain LDR limits need not be addressed in the ACWMP.

Proposed Regulatory Changes

Add a new special rule in 262 Part K (ACWMPs):

§262.202 Special Rules Applicable to ACWMPs

(c) For purposes of meeting the goals of §264.173 (container management standards), and subject to limitations in 40 CFR 264.17, academic chemical waste undergoing treatment in accordance with the institution's ACWMP, is not considered in storage for the purposes of this section. Treatment containers may be open for the treatment procedure, as necessary.

(d) For purposes of meeting the goals of 40 CFR 268.1(c), academic chemical wastes that are hazardous because they exhibit a hazardous characteristic or are listed, and which are otherwise prohibited under this part, are not prohibited if the wastes meet any of the following criteria:

(1) The wastes are managed in a treatment system which subsequently discharges to waters of the U.S. pursuant to a permit issued under section 402 of the Clean Water Act; or

(2) The wastes are treated for purposes of the pretreatment requirements of section 307 of the Clean Water Act; or

(3) The wastes are managed in a zero discharge system engaged in Clean Water Act-equivalent treatment as defined in Sec. 268.37(a); and

(4) The wastes no longer exhibit a prohibited characteristic at the point of land disposal (i.e., placement in a surface impoundment.)

5. Authorize academic institutions to have a single EPA ID number per campus to support centralized chemical waste management.

Issue

Most colleges and universities have a centralized management system for academic chemical waste, which has little relationship to EPA ID numbers or definitions of "site." Because public roads divide many college campuses, current rules sometimes require multiple ID numbers for a single campus**.** Multiple ID numbers on a campus increase the workload for campus waste

management personnel and do not promote “best management practice” of a centralized campus waste management program. The lack of centralized management decreases environmental control across campuses.

Current regulations rely on the term “contiguous property” and are inconsistently applied, often resulting in numerous EPA ID numbers for a single university. The military munitions rule provided minimal relief for transportation on public roads and does not alleviate the record keeping and reporting burden.

Proposed Regulatory Changes

Amend 40 CFR §260.10 (definitions) to add the following at the end of the definition, following the words, "on-site property":

> "For institutions of higher education (SIC codes 821 and 822), *on-site* means the campus property, defined by the institutional Academic Chemical Waste Management Plan, under the control of the higher educational institution, which may be divided by public or private right-of-ways."

6. Authorize academic institutions to retain small generator status consistent with their activities.

Issue

The unique manner in which institutions of higher education operate causes confusion and ambiguity because of their 'on again-off-again' status as generators of hazardous waste. For most of the year, these facilities generate very little hazardous waste (in particular acute hazardous waste) and are therefore Small Quantity Generators ("SQG") and Conditionally Exempt Small Quantity Generators ("CESQC”.) But they may generate small amounts of P-listed or acute hazardous waste because of the end of the academic year, which coincides with end of classes, grants or research, and times of faculty turnover. This could result in institutions becoming subject to the LQG requirements even though for 11 months of the year and with respect 99% of their activities, such regulation is not appropriate. Recognizing this will eliminate confusion and ambiguity, and allow the institution to avoid constantly changing requirements.

Proposed Regulatory Changes

Amend 40 CFR §261.5(e) to add a new subsection (3) as follows:

> "For purposes of this subsection, Acute Hazardous Wastes that are also academic chemical wastes generated by institutions of higher education shall not affect the generator status of the institution of higher education as long as the generator provides for management of such Acute Hazardous Waste in accordance with 40 CFR §262 Part K."

Part II: Responses to Agency Questions

1. When should the hazardous waste determination be made in a laboratory setting?
The hazardous waste determination for laboratories and art studios within the Higher Education Sector should occur when the waste enters the campus waste management system and mirror the "manufacturing process unit exclusion" of 40 CFR 261.4(c). A person(s) so designated by the institution should make the determination. Most students, faculty and staff are not qualified to make a RCRA determination because they do not have institutional knowledge of what materials may be unusable by others within the institution (and are therefore not waste) and because they do not have the expertise in the criteria for RCRA regulation. Current RCRA regulations require a waste determination be made in the lab or studio of initial use. This results in increased disposal costs and eliminates opportunities for waste minimization. By allowing the waste determination to be made after the substance is removed from the laboratory or art studio, other uses for the substance may be identified. This timing also provides an opportunity for small-scale treatment. We propose that this be addressed in the ACWMP.

2. What training is needed for lab personnel concerning hazardous waste determinations (e.g. full RCRA training or training that is made specific to the chemical management duties)?
The Higher Education Sector strongly encourages the EPA to permit the training requirements of lab and art studio personnel to be tailored to the individual's chemical waste management duties. Full RCRA training, including hazardous waste code determination and manifest preparation may be inappropriate for laboratory and art studio personnel, and should not be mandated. This can be addressed in the ACWMP.

3. How should waste be labeled so it can be appropriately managed as hazardous waste (e.g., the words "hazardous waste" or a detailed chemical description)?
Current OSHA regulations (e.g., OSHA Hazard Communication Standard and OSHA Laboratory Standard) adequately regulate the labeling of chemicals in laboratories, art studios and other campus workplaces. EPA regulations should not duplicate current OSHA law.

Upon entering the campus chemical waste management system (as described in the ACWMP), waste containers should be labeled with the term "Hazardous Waste" or a chemical identifier appropriate for the chemical. In many lower level academic laboratories, the "chemical identifier" may be rather simplistic, "Waste _____" or "Mercury Clean-up residue". However, in more advanced academic research laboratories, detailed chemical descriptions may be appropriate. The detailed chemical description may be required to determine treatment/disposal methods. The ACWMP would specifically address what chemical identifier(s) would be most appropriate for their specific waste streams.

However, it is important that this requirement be applied in a sensible manner. One of the waste reduction methods implemented in academic laboratories involves microscale chemical activities. This can result in extremely small quantities of waste. When wastes are contained in these extremely small vials or other very small containers (less than 100 ml), it would be appropriate for the labels to be placed in a larger container used to maintain a group of the small vials rather than requiring labeling of each individual vial. Again, this can be addressed in the ACWMP.

4. Where should the hazardous waste determination be made (e.g., on the bench or in the 90 to 180 day storage area)?
As noted in the response to Question #1 above, the hazardous waste determination for laboratories and art studios in the Higher Education Sector would most appropriately occur when the waste enters the campus waste management system. The ACWMP proposal would permit this. As will be described in each university's ACWMP, the waste determination may occur in the laboratory, art studio, or a 90/180/270 day accumulation area.

The academic calendar is based upon semesters that are typically 100 to 115 days in length. The 90-day limits of the RCRA calendar require chemical wastes from the first weeks of the semester be managed separately from those generated later in the semester – or be stored in laboratories and art studios with students, equipment and much activity.

To improve waste minimization, manage costs and remove wastes from student occupied spaces, the ACWPM proposal would allow the hazardous waste management calendar for colleges and universities be synchronized with the academic calendar. Hazardous wastes generated by colleges and universities could be maintained for a period not to exceed one year. This date would be clearly marked on the waste container when it is relocated to that area.

5. How should the Satellite Accumulation Area (SAA) accumulation time (volume exceeding 55 gallons of hazardous waste or 1 quart of acute hazardous waste must be removed within 3 days) be applied in a laboratory context?
Because universities are more common generators of acute hazardous waste, the three-day SAA limit is unduly onerous. As previously noted, college and university laboratories and art studios with equipment and 15 – 30 students intent upon completing the day's activities, require special precautions for safe storage of hazardous waste. The ACWMP will identify such precautions for chemical waste management.

6. How often do laboratories accumulate more than 55 gallons of waste in their SAA?
The three-day limit in the Higher Education Sector is more likely to be triggered by the generation of more than 1 quart of acute hazardous waste rather than by 55 gallons of other-than-acute-hazardous waste. A trigger volume of hazardous waste is most often generated at the end of the academic year, corresponding to faculty retirements and lab closures.

7. What, if any, difficulties do environmental health and safety personnel have responding to waste pick-up calls, e.g., within the three-day time limit?
EHS personnel or other designated personnel with waste management duties may not be able to remove the excess waste from all affected labs or art studios within the three-day limit due to the precipitating events (faculty retirements and lab closures) being concentrated at the end of the academic calendar. The three-day time limit is unreasonable, burdensome and inefficient for universities that have taken precautions (described in the ACWMP) to store hazardous waste safely and in an environmentally sound manner.

8. How would a longer time frame for removal impact the cost of waste management and the ability to protect human health and the environment?
Synchronizing the chemical waste management calendar with the academic calendar is essential. To improve waste minimization, manage costs and remove wastes from student occupied spaces,

the ACWMP would permit hazardous wastes generated by colleges and universities to be maintained on a campus for a period not to exceed one year.

9. What types of treatment, other than neutralization, are laboratory personnel currently performing or would like to perform?

Colleges and university laboratories generate an innumerable variety of wastes. Researchers, principal investigators, and their support staff are in the unique position of being intimately familiar with chemical processes that could reduce the volume, toxicity and reactivity of their typically small volumes of waste. It would be impossible to list all the possible types of treatments that might be performed, but a partial list can be found in *Hazardous Laboratory Chemical Disposal Guide, Second Edition* (Armour, 1996) and *Prudent Practices in the Laboratory: Handling and Disposal of Chemicals* (National Research Council, 1995) and *Destruction of Hazardous Materials in the Laboratory* (Lunn and Sansone).

The ACWMP proposal would clearly permit bench top and small-scale treatment of laboratory and art studio wastes subject to appropriate safeguards addressed in the ACWMP.

10. What would be the benefits of the desired types of treatment?

Bench top and small-scale treatment of the small amounts of hazardous waste generated in laboratories and art studios within would result not only in reduced disposal costs, but also reductions in volume, toxicity and reactivity of waste maintained on campuses and those shipped off-site for treatment/disposal.

Conclusion

For almost two decades, EPA and Congress have recognized that RCRA regulations do not recognize or 'fit' the unique nature of activities at many institutions of higher education. Corrections are possible that will enhance environmental protection, reduce waste, decrease costs, and provide institutions of higher education with the flexibility needed to assure these goals. The foregoing recommended regulatory changes address these concerns, and we request that EPA place this reform effort on its Regulatory Agenda and promulgate the regulations outlined in this submission. If you have any questions about this proposal, please contact Peter Reinhardt (919-843-5913), Peter Schneider (617-353-4094) or Cheri Hildreth Watts (502-852-2954).